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ILL and ESS – Key Neutron Sources for Scientific Research

Sunday, 7 September 2025 14:00 (30 minutes)

Neutron sources constitute a unique research tool, particularly valuable in studies of the structure and dynamics of condensed matter, as well as in chemistry, biology, materials science and life sciences. Currently, the two most important European centres of this kind are the *Institut Laue–Langevin* (ILL) in Grenoble and the emerging *European Spallation Source* (ESS) in Lund. For more than five decades, ILL has provided access to a high-flux research reactor, forming the basis for many breakthrough studies, including those on high-temperature superconductivity, novel magnetic phases, structural biology and natural sciences. ESS, as the world's most advanced spallation source, will in the coming years offer new experimental opportunities – in neutron spectroscopy and diffraction, studies of functional materials, life sciences, as well as processes occurring on time scales from picoseconds to microseconds.

The Polish scientific community mainly uses the instruments available at ILL and is gradually preparing for future utilisation of the ESS infrastructure. A key challenge for the coming years is to strengthen the involvement of Polish research teams and to make more effective use of these instruments so that both facilities can better support research carried out in our country.

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